

# **U.S. BUREAU OF RECLAMATION**

## **RECLAMATION STRUCTURES**

**WATER RETENTION AND CONVEYANCE STRUCTURES – INCLUDES:**  
DAMS (EARTHEN AND CONCRETE), CANALS (LINED AND UNLINED), PUMPING PLANTS, CHECK STRUCTURES, SIPHONS, DRAINAGE OVERCHUTES OR SIPHONS, CONCRETE LINED DIVERSION TUNNELS, PIPELINES, CONTROL TOWERS AND SURGE TANKS/CHAMBERS, METERS, PUMPS, VALVES AND OTHER WATER FLOW CONTROL STRUCTURES.

**FISH HATCHERIES:** Trinity River – Lewiston, American River – Hazel Road, Sacramento River – Shasta Dam, and Coleman Hatchery at Battle Creek at Cottonwood.

**BRIDGES - TYPES:** about 5,000 in CA. - STEEL, CONCRETE AND TIMBER

**ROADWAYS – TYPES:** ASPHALT SURFACED, CONCRETE PAVEMENT, GRAVEL

**RECREATIONAL FACILITIES** – Oak Shores and Capell Cove at Lake Berryessa,

**POWER PLANTS, TRANSMISSION TOWERS, POWER LINES, TRANSFORMERS, AND SWITCH YARDS:**

**AUTOMATED STREAM FLOW GAGING AND/OR WEATHER STATIONS:**

## **CONCERNS FOR RECLAMATION**

**ENCROACHMENT:** Structures built on, improper use of, or “improvements” made to Reclamation’s lands without permits or approvals. These are issues that concern our management, legal and real-estate personnel.

**NEW DEVELOPMENT NEARBY:** Technical personnel are concerned with the potential impacts to Reclamation structures, our ability to access and/or operate structures as designed, or an increase in maintenance costs.

## **ENGINEERING, GEOLOGY AND HYDROGEOLOGY**

**CONCERNS:** Potential impacts on structures, foundations of structures, and groundwater quantity, quality and water pressures on our structures.

**A.)** Landscaping and irrigation of plants near canals – may change of water pressure on canal lining in the subsurface leading to failure, increase burrowing animal activity that can lead to failures of canals.

Pictures for examples:

**B.)** Impacts on existing drainage features (Overchutes, Intakes or Siphons) – increased flows or increased peaks in flows due to infiltration rates in the upstream drainage areas (paving, building structures, channelizing drainages) may overcome these structures abilities to pass drainage flows as designed causing damage to our structures. Raises in dams downstream of drainage structures or development of wetlands and associated vegetation development may impede flows to the downstream of the structures, again potentially damaging structures.

Pictures for examples:

**C.)** Runoff flows draining or seeping into canal water may decrease water quality.

Pictures for example:

**D.)** Development of runoff retention basins or retention dikes adjacent to the canal or structure may damage canal lining or foundation of structures.

Diagram:

**E.)** Development of in-stream mines for gravel downstream of Reclamation siphons or bridges will potentially cause stream bed erosion, head-cutting and eventual uncovering or undermining of siphons, and piles or footing for bridges, failing them. Gradient restoration structures (Orestimba Creek, Thomes Creek or Stony Creek) cost millions to build and maintain. These were built to mitigate (stop structures from failing) due to this increase in stream bed erosion.

Pictures and diagram:

**F.)** Excavation of pits (open pit mines) adjacent to our structures can lead to failure of canals.

Pictures and diagram:

**G.)** Tunneling under canals or structures can lead to failures.

Diagram:

**G.)** New utilities over canals – potential for sabotage, vandalism and in-stream hazards.

Picture:

## **ADDITIONAL CONCERNS:**

**A.)** Loss of life due to failure of structures or drownings.

Picture:

**B.)** Property Damage due to failure of structures.

Picture:

**C.)** Increase in vandalism, decrease in security of sites.

Picture:

**D.)** Increase in illegal dumping, increase in maintenance costs.

Pictures:

**F.)** Squatters and/or use of Reclamation land without authorization.

Pictures: